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Published in:
Conference proceedings of the Academy for Design Innovation Management

DOI:
10.33114/adim.2019.w01.476

Publication date:
2019

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Document Version
Publisher's PDF, also known as Version of record

Academy for DESIGN INNOVATION MANAGEMENT Conference 2019
LONDON, UNITED KINGDOM
19–21 JUNE 2019
Research Perspectives IN THE ERA OF Transformations

Design for Climate Services: A Co-Design Approach

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doi: 10.33114/adim.2019.w01.476

Introduction

Droughts, floods and other climate-related hazards present critical challenges for communities across the world. Design is well-placed to respond to such wicked problems (Buchanan, 1992) however a user-led approach to the development of climate services is rare (Christel et al, 2017). Instead, scientists and governments rely on research and innovation between science and industry to develop climate services for early warning systems and decision-making. The design community is uniquely placed to contribute to such developments, particularly in proposing new perspectives where citizens are themselves potential users of such services and at the forefront of change-making practices.

Workshop purpose and aims

This workshop introduced delegates to the concept of Citizens' Observatories (COs), and, moreover, the GROW Observatory and its communities across Europe who are monitoring soil in real time across a range of geographic and climatic areas.

The purpose of the workshop was threefold:

1. To test and reflect on assets and materials currently in development for a CO Toolkit
2. To ideate services that enable other researchers and practitioners to better understand climate service innovation
3. To present climate scenarios and data from real communities facing critical environmental challenges.

Theoretical relationship

COs represent new developments in social innovation where citizens and communities are gathering environmental data on issues that matter to them and innovating with them (Schartinger et al, 2017). Many of these projects are driven by design thinking and methods that support action-oriented outcomes for communities to transform these matters of concern themselves (Woods et al, 2018). We propose large-scale climate services can be developed using design approaches, and in collaboration with citizens whose livelihoods and communities are affected by extreme events, such as forest fires, drought and flooding.

Workshop approach:

The workshop had three main phases:

1. An introduction to a) the workshop objectives and b) COs with a focus on soil moisture as a dataset for climate change adaptation, and an outline of related critical environmental issues e.g. drought, flooding, forest fires and heatwaves.

2. The group were presented with a toolkit comprising post-its, pens, an empathy timeline, and the ‘climate services’ deck of cards (figure 1) which included:

Personas: representing the roles as well as concerns and motivations of typical stakeholder groups

Places: information about a country, such as natural assets, climatic profile and main agricultural activities

Data: climate and environmental data relevant to the personas, place and scenario

Scenarios: emerging climate related critical issue

Figure 1 Climate Services Cards

In groups, each member selected a persona and data card, and collectively chose a country and scenario card. Participants were instructed to adopt their persona role and, using an empathy timeline (see Figure 2) respond to their emergency scenario. Groups discussed and recorded inputs and outputs of data from the perspective of their personas ‘needs’, using sensors, observations and other information required for decision-making and action. Subsequently, teams extended the timeline to consider the scenario in ‘pre and post emergency’ periods for prevention and recovery monitoring respectively.

Figure 2 Example Empathy Timeline

Groups ideated a climate service based on their scenario and data and shared the results. Using a 'dotocracy' of red and green dots, participants offered feedback on the method and resources used.

Results

The primary objective of the workshop was to test and evaluate the co-design method and tool, the workshop approach and activity is demonstrated by visual evidence of co-design and sharing in figures 3 and 4.

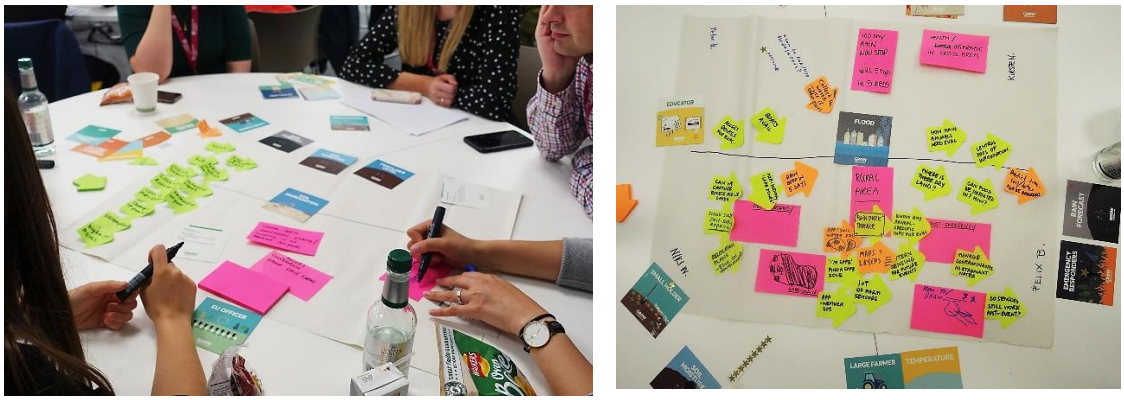

Figure 3 Group Sheets showing a critical environmental issue on the empathy timeline

Figure 4 Group Presenting their service to the room

The scenarios and service outcomes were judged as particularly successful and so we report on those in Table 1 which shows groups 1 to 3, with a brief description of their chosen scenario and service proposition. Feedback on the method and tool was gathered, attendees requested more information such as 'country' context, and details in the 'data' cards.

Table 1: *Results of the co-design session by group*

Group	*1*	*2*	*3*
Title	Rain Check Service	Agropoli 4.0	Ration My Water Tank
Climate Scenario	Flooding in a rural area of the Netherlands, 100 day rain non-stop and health outbreaks	Long term soil degradation in rural Greece with huge socio-economic impacts	Long term drought in Greece/Portugal
Service Proposition	An Observatory receiving and providing a wide range of information, from evacuation details to capturing excess for later use.	CO system to foster cooperation between stakeholders and a transition to a regenerative agricultural system.	Smart water tank that allows owner/user to monitor and ration litres available with peer to peer dimension.

Takeaways for the participants

There were two main types of takeaways for participants as part of the project:

Theoretical:

- The introduction to COs and the data driven business opportunity;
- Underlying value creation in relation to climate change regarding design innovation;

Methodological:

- A practical method and tool based on gamification and role play to support co-design of service innovation based on observatory data was tested, with high level outcomes.
- Groups valued succinct and background information that supported rapid understanding of the topic.
- A design process and resources can help groups of different stakeholders understand the premise, adopt roles, create scenarios, understand data flow and ideate a service in a constraint time.
- The purpose of the card set is to create dialogue, rather than to provide a highly accurate representation of a current or preferred reality.

Reflections

There were two main types of takeaways for participants as part of the project:

Quality of service propositions generated: The methodology allowed groups to generate high-level prototype services in a short session. One of the groups ideated a service for which GROW had already begun to develop the scientific basis within the project.

Trans-disciplinary approach: We validated and reinforced the CO approach through an integrated stakeholder response, and highlighted the contribution that designers offer to co-create climate services.

Potential for climate services: A sustainable observatory system can be a long-term powerful contributor to disaster management, prevention and monitoring recovery.

Empathy design (Gasparini, 2015) and design for emotion (Desmet and Hekkert, 2009): The persona cards and role play encouraged an empathetic response to stakeholders' concerns and motivations. The tool was also designed to generate engagement through emotion: rather than designing a service chronologically, starting with prevention, teams were placed in the scenario, a crisis situation, triggering an intense response to relate participants to a call to action more easily; teams then considered pre and post crisis event scenarios.

The introduction of the tool in the emergency phase of the timeline created a powerful narrative to which teams were able to respond in role.

Next steps: GROW will iterate the tool and workshop with a diverse audience including the categories of personas presented and with communities experiencing the scenarios in real life. This will be achieved through future sessions that 1) provide more time, 2) build on the stakeholders' expertise, and 3) acknowledge a deeper complexity likely when working with a community that is 'threatened', in order to generate deeper insights.

Acknowledgements

The authors would like to thank Jane Boyes for the design of the Co-Design Climate Services Cards and our participants in the workshop. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 690199 (see www.growobservatory.org).

References

Buchanan, R. (1992). Wicked Problems in Design Thinking. *Design Issues, 8*(2), 5-21. doi:10.2307/1511637

Christel, I., Hemment, D., Bojovic, D., Cucchietti, F., Calvo, L., Stefaner, M. and Buontempo, C., 2018. Introducing design in the development of effective climate services. *Climate Services*, 9, pp.111-121.

Desmet, P.M. and Hekkert, P., 2009. Special issue editorial: Design & emotion. *International Journal of Design*, *3*(2).

Gasparini, A., 2015. Perspective and use of empathy in design thinking. In *ACHI, the eight international conference on advances in computer-human interactions* (pp. 49-54).

Schartinger, D., Wepner, B., Andersson, T., Abbas, Q., Asenova, D., Damianova, Z., ... & Schröder, A. (2017). Social Innovation in Environment and Climate Change: Summary Report.

Woods, M., Balestrini, M., Bejtullahu, S., Bocconi, S., Boerwinkel, G., Boonstra, M., ... Seiz, G. (2018). *Citizen Sensing: A Toolkit*. Making Sense. https://doi.org/10.20933/100001112